IN THE CLAIMS

Applicant declines to amend the claims at this time. For the Examiner's convenience, all of the originally filed claims are reproduced below.

1. (Original) A method of reducing noise in a vehicle propelled by an electric motor having a plurality of phases, the method comprising the steps of:

observing noise produced within the vehicle for at least one of the plurality of phases;

determining a transfer function between the noise produced by the at least one of the plurality of phases; and

applying the transfer function to produce a control signal for the motor, wherein the control signal is asymmetric with respect to the at least one of the plurality of electrical phases to thereby adjust acoustic signals produced by the electric motor.

2. (Original) The method of claim 1 wherein the applying step comprises generating the control signal so as to reduce the noise produced within the vehicle with the acoustic signals.

3. (Original) The method of claim 1 further comprising the step of adjusting the control signal for the motor in response to feedback measurements obtained by an acoustic sensor.

4. (Original) The method of claim 1 further comprising the step of adjusting the control signal for the motor in response to a change in vehicle speed.

5. (Original) The method of claim 1 further comprising the step of adjusting the control signal for the motor in response to a change in vehicle loading.

6. (Original) A device having active acoustic damping, the device comprising:
a motor comprising a plurality of independently actuatable regions;

a noise sensor configured to measure a noise and to provide a noise measurement as a function thereof; and

a controller configured to receive the noise measurement and to provide a control signal to the motor as a function of the noise measurement, wherein the control signal comprises a plurality of phases, each phase corresponding to one of the independently actuatable regions, and wherein the controller is further configured to adjust the plurality of phases with respect to each other to thereby produce acoustic vibrations with the motor.

7. (Original) The device of claim 6 wherein the vibrations are configured to cancel at least a portion of the noise measured by the noise sensor.

8. (Original) The device of claim 6 wherein the controller is further configured to produce the control signal using a transfer function of the noise.

9. (Original) The device of claim 6 wherein the device is a vehicle.

10. (Original) The device of claim 6 wherein the device is an unmanned underwater vehicle (UUV).

11. (Original) A method of actively damping a noise with a motor, the method comprising the steps of:

obtaining a measurement of the noise;

processing the measurement to produce a control signal for the motor as a function of the noise; and

providing the control signal to the motor to thereby adjust an acoustic signal produced by the motor, wherein the acoustic signal is configured to produce a tone that cancels at least a portion of the noise.

12. (Original) The method of claim 11 wherein the processing step comprises applying an inverting transfer function to the measurement.

13. (Original) The method of claim 11 wherein the control signal comprises a plurality of phase controls, each provided to an independently-actuatable phase of the motor.

14. (Original) The method of claim 11 wherein the processing step comprises altering one of the plurality of phase controls to be unequal to the remaining phase controls.

15. (Original) The method of claim 14 wherein the altering step comprises altering a magnitude of the unequal one of the plurality of phase controls.

16. (Original) The method of claim 14 wherein the altering step comprises altering a frequency of the noise canceling portion.

17. (Original) A noise canceling control system for a motor, the control system comprising a processor and memory coupled to a noise sensor, wherein the memory is configured to store instructions for the processor, the instructions comprising:

a first code module configured to receive a noise measurement from the noise sensor; and

a second code module configured to provide a control signal to the motor in response to the noise measurement to thereby produce a vibration with the motor, wherein the vibration produces a tone configured to cancel at least a portion of the noise at the noise sensor.

18. (Original) A noise-canceling control system for a device having a motor, the control system comprising:

means for generating a control signal for the motor, wherein the control signal comprises a plurality of phases; and

means for adjusting at least one of the plurality of phases of the control signal to thereby produce a vibration with the motor, wherein the vibration produces a tone that cancels at least a portion of the noise.

19. (Original) A noise-canceling control system for a device having a motor, the control system comprising:

means for receiving a measurement of the noise;

means for processing the measurement to produce a control signal for the motor as a function of the noise; and

means for providing the control signal to the motor to thereby adjust an acoustic signal produced by the motor, wherein the acoustic signal is configured to produce a tone that cancels at least a portion of the noise.

20. (Original) A system for reducing noise in a vehicle propelled by an electric motor having a plurality of phases, the system comprising:

means for observing noise produced within the vehicle for at least one of the plurality of phases;

means for determining a transfer function between the noise produced by the at least one of the plurality of phases; and

means for applying the transfer function to produce a control signal for the motor, wherein the control signal is asymmetric with respect to the at least one of the plurality of electrical phases to thereby adjust acoustic signals produced by the electric motor.